



## **Executive Summary**

# **Securing Japan**

An assessment of Japan's  
strategy for space

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# TABLE OF CONTENT

- JAPAN IN SPACE: AN OVERLOOKED – YET PROFOUND – TRANSFORMATION ..... 1
  
- JAPAN'S SPACE ACTIVITIES OVERVIEW ..... 2
  - Institutional framework ..... 2
  - Programmes and Capabilities ..... 3
  - Space policies and law ..... 4
  
- JAPAN'S SPACE STRATEGY: DRIVERS, OBJECTIVES AND TOOLS ..... 6
  - Leverage the Science & Technology edge ..... 7
  - Invigorate the space industry ..... 9
  - Enhance security *through* and *in* outer space: ..... 11
  
- FUTURE OUTLOOK ..... 13
  
- ABOUT ESPI ..... 14

## JAPAN IN SPACE: AN OVERLOOKED – YET PROFOUND – TRANSFORMATION

For almost five decades, Japan has been the undiscussed space leader in Asia, due to its development of launchers and state-of-the-art satellite systems, ground-breaking exploration missions and its status as the only Asian country participating in the International Space Station (ISS) venture.

Japan's space programme and policy have followed a unique trajectory, heavily influenced by historical factors facilitating and constraining their development. Shaped by the U.S. occupation of Japan and a strong U.S. influence on post-war politics, Japan enshrined its commitment to becoming a pacifist country in Article 9 of its constitution of 1947, in which it renounced the right to war. In line with the so-called Yoshida Doctrine, the country put constraints on security related space policy in particular. Perhaps the most apparent example is the "Peaceful Purposes Resolution" (PPR) of 1969, which clarified that Japan's space activities had to be "limited to peaceful purposes" (*heiwa no mokuteki ni kagiri*), with "peaceful" meaning both "non-aggressive" and "non-military". This self-imposed ban on the use of space technology for military purposes inevitably impacted also the development of the domestic space industry, which could not count on the captive military demand to generate economies of scale and competitive commercial solutions. Moreover, with the 1990 US-Japan Satellite Procurement Agreement, Japan even ended the protection of its still developing satellite market from international tendering.

Because of these historical factors, the Japanese space programme had to follow an almost exclusively science and technology-oriented space policy for half a century, often fuelling the impression that these efforts were guided by "anything like a coherent national strategy". Adding to these perceptions, since the late 1990s, the country has been experiencing a prolonged "space crisis" with regard to strategic direction, management, and level of involvement in space activities. Affected by a decade of economic stagnation and political volatility known as "the lost decade" (*ushinawareta junen*), the political support for space endeavours stagnated, and the space budget hardly rose at all. Ambitious programmes were drastically downsized, and the space industry entered a period of profound confusion. What is more, the growing attention paid to the concomitant ascendancy of China contributed to a ubiquitous global perception of "a wave of Japan passing"<sup>1</sup>, which was duly reflected also in the space arena.

While the impressive achievements of China have certainly contributed to diverting international attention from Japan's ambitions in space, this does not mean that Japan is no longer a protagonist of global space activities. Far from it. Since the enactment of the Basic Space Law in 2008, **Japan's space programme has been quietly - yet firmly – undergoing a profound transformation aimed at conferring the country with the tools to reinvigorate its strength, prestige and autonomy in the international space arena**. While the process is still ongoing, the key pillars of Japan's grand strategy for space have already emerged in many key policy documents.

Most commentators have rightly emphasized the increased *militarization* (or more properly normalisation) of the programme, yet failed to connect this transition with other substantive goals in the country's strategic profile. A careful examination of Tokyo's strategic posture would reveal that the scope of this transformation is in fact much broader and far-reaching. Indeed, the Japanese space programme is an increasingly complex and multi-layered endeavour that is driven by a wide range of security, socio-economic and political considerations.

Tacking stock of the release of the new Basic Space Plan in June 2020, it is this report's objective to disentangle all these dimensions and identify both the driving forces and objectives that are guiding Japan in its space efforts.

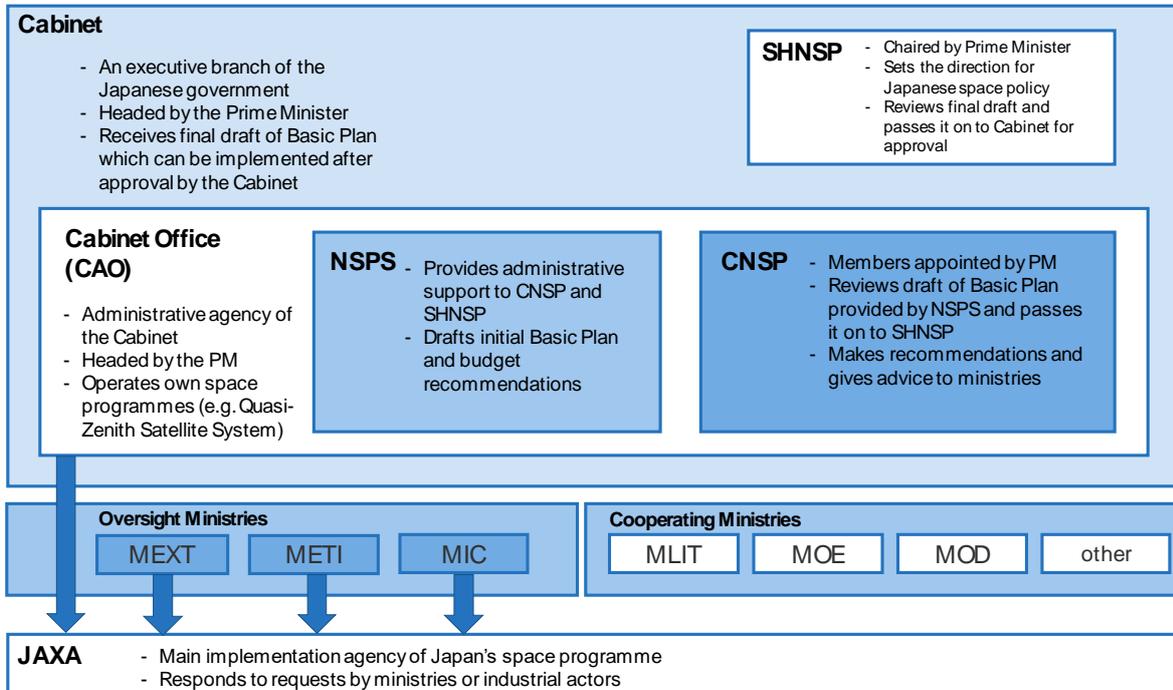
<sup>1</sup> Pempel, T. (2007). The Pendulum Swings toward a Rising Sun. *Asia Policy*, 4, 188-190.

## JAPAN'S SPACE ACTIVITIES OVERVIEW

### Institutional framework

The institutional framework to run the Japanese space programme has evolved over the time, and now encompasses a wide range of institutional and private actors and is accompanied by a comprehensive policy framework.

The **Japanese Aerospace Exploration Agency (JAXA)** is the main implementation agency of the Japanese space programme, tasked with development of launch systems and satellite development, launch and operations. **Four key ministries** in particular oversee JAXA's activities and formulate and implement specific sectorial strategies: The Cabinet Office via the Minister for Space Policy, the Ministry for Education, Culture, Sports, Science and Technology (**MEXT**); the Ministry of Economy, Trade and Industry (**METI**); the Ministry for Internal Affairs and Communication (**MIC**). Different bodies of the **Cabinet**, an executive branch of the Japanese government headed by the Prime Minister, are responsible for the formulation, drafting and review of Japanese space policy.



Turning to Japan's **space industry**, it is dominated by four primes in the upstream segment – Mitsubishi Heavy Industries (MHI); IHI Aerospace Co., Ltd; Mitsubishi Electric Corporation (MELCO); and NEC Space Technologies, Ltd (NEC) – which do not have space as their sole market segment. Major Japanese **Satellite Operators** are SKY-Perfect JSAT Corporation; Broadcasting Satellite System Corporation; Pasco Corporation. Japanese **Service Providers** are Asia Air Survey; Aero Asahi Corporation; Remote Sensing Technology Center of Japan (RESTEC); NTT Data Corporation. Japan has also seen a growing number of **NewSpace companies**, which include Ispace; iQPS; Axelspace; ALE; Astroscale; Synspec; Interstellar Technologies; PD AEROSPACE; Space Walker; Infostellar.

## Programmes and Capabilities

Japan's space programme encompasses a wide range of programmes and technological capabilities – including indigenous launch capabilities, an array of satellites in space, a space exploration programme as well as military space applications.

Japan's major programmes and assets	
Launch	Japan launch vehicles are the Epsilon launch vehicle (in two configurations for different mass, transporting to LEO and SSO); the H-IIA two-stage liquid propellant launch vehicle for heavy payloads; the H-IIB two-stage liquid propellant launch vehicle primarily used to transport cargo on the H-II Transfer Vehicle (HTV) to the ISS; and the modified SS-520 sounding rocket for small satellites.
Navigation	Japan operates a Regional Navigation Satellite System (RNSS) called the Quasi-Zenith Satellite System (QZSS). Its first satellite was launched in 2010 and currently consists of 4 satellites. The QZSS follows an orbital path above Japan in the shape of an eight. Japan aims to increase the QZSS to a 7-satellite constellation by 2023.
Earth Observation and Meteorology	Japan has a fleet of EO satellites collecting data for meteorology (e.g. Himawari satellite series), land and ocean observation (ASAR series, ALOS-2), environment and weather observation (GOSAT series, GCOM-C, GMP). Furthermore, Japan operates a fleet of eight Information Gathering Satellites (IGS) – five radar imaging satellites, three optical imaging satellites – which are used for national security purposes.
Telecommunication	The majority of Japan's communication satellites is commercial, with the exception of Japan's military communication satellites Kirameki 1 and Kirameki 2. Commercial telecommunication satellites include the N-Star C satellite and the Superbird and JCSat series owned and operated by Sky Perfect JSAT Corporation and the BSAT satellite series of Broadcasting Satellite System Corporation.
Space Science & Exploration	Japan has a world-class space sciences programme and a long-standing experience in robotic exploration. Notable missions include asteroid sample return missions Hayabusa and Hayabusa-2 as well as the launch of a variety of astronomical, space physics, near-Earth observation satellites and space exploration missions to destinations such as the Moon, Mercury and Venus.
Human Spaceflight	Japan is the owner of a module contributing to the ISS. The participation in the ISS programme has two important cornerstones: exploitation of the Japanese experiment module KIBO (Hope) and the H-II Transfer Vehicle (HTV), the automated cargo spacecraft used to resupply the KIBO and the ISS.
Space Domain Awareness	Japan has built an infrastructure for SSA activities, which covers space surveillance and tracking (SST), Space Weather (SWE) and Near-Earth Objects (NEOs). Through their facilities, JAXA and MOD perform the following tasks: 1) monitoring space debris, 2) database compilation of debris orbits, 3) analysis of their approach to satellites, and 4) predestination of their re-entry to the atmosphere. Overall, while Japan can deliver value-added products, it is still reliant on outside capabilities, particularly those of the United States, with which Japan has signed an SSA sharing agreement.

## Space policies and law

The Basic Space Law of 2008 to this day makes up the most important legislative document pertaining to space for Japan and builds the foundation of all space policy. The Basic Space Law's aim is to "stipulate basic principles and basic matters for the realization of the basic principles" in regards to the development and use of outer space<sup>2</sup>. The general provisions contain articles on the purpose of the Basic Space Law in regard to its compatibility with the Constitution of Japan, particularly in regard to the "Peaceful Use of Outer Space". Here it affirms that Japan's use of space falls in line with treaties and international agreements, such as the Outer Space Treaty – thus adjusting its previous interpretation of "peaceful" to the internationally practiced definition which allows for military use of space.

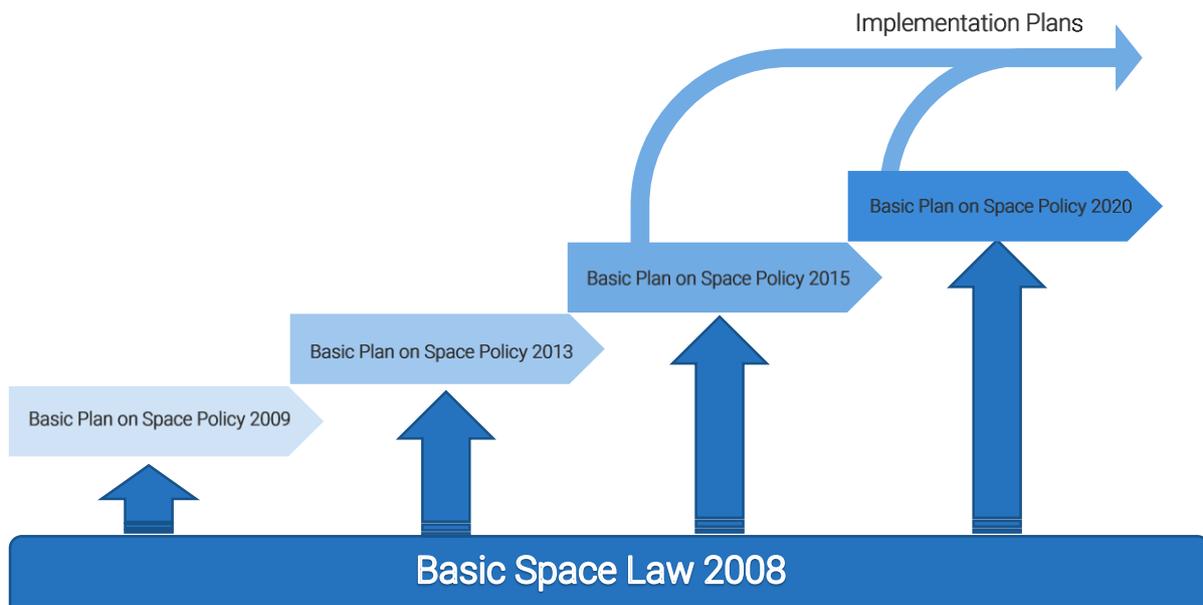


Figure 1: Evolution of Japan's space policy (source: authors' visualisation)

Article 24 (2) of the Basic Space Law of 2008 introduces the Basic Plan on Space Policy (BSP), which prescribes "the basic policy with regard to Space Development and Use", "the measures the Government shall comprehensively and systematically implement with regard to Space Development and Use" as well as "concrete goals and fixed time frames for realizing them"<sup>3</sup>. Indeed, the four Basic Plans on Space Policy released thus far – the first one in 2009, then 2013, 2015 and the most recent one in 2020 – detail the government's goals for the space policy, concrete approaches and measures planned, programmatic targets and Japan's conceptualization of geopolitical challenges and the role of space plays for Japan. An overview of the 2020 Basic Space Plan (released on 30 June 2020) is provided in Table 1.

Additionally, the government has released the so-called "Implementation Plan of the Basic Plan on Space Policy", which details concrete programmatic targets and their implementation timelines. The Implementation Plans do not replace the Basic Plan on Space Policy, but rather works in conjunction as the main plan that sets out the measures used to reach the objectives envisioned in the Basic Plan on Space Policy.

<sup>2</sup> Cabinet Office. (2008). *Basic Space Law*. Tokyo: Cabinet Office.

<sup>3</sup> Ibid.

## The Basic Space Plan 2020

The 2020 Basic Plan on Space Policy, officially enacted on 30 June 2020, is structured around four main parts. The first part reflects on the context and the environment in which the space policy functions and points out particular circumstances such as changes in the outer space power balance, the growing importance of space security, the exacerbating risks to the stable and sustainable utilization of outer space, the rise of private space activities, the rapid advances in S&T as well as the spread of worldwide space activities.

Part 2 of the policy reflects on the goals of Japan's space policy which are "contributing to national interests" as well as the "maintenance and reinforcement of the space infrastructure, including the industrial, scientific and technological base"<sup>4</sup>. Stated national interests are:

- ensure space security,
- strengthen disaster countermeasures, national security and contribute to addressing global issues,
- create new knowledge through space science and exploration,
- realise space-driven economic growth and innovation,

In Part 3, the Basic Plan on Space Policy continues to state "Japan's basic stance for fostering space policy" which includes guidelines on the prioritizations of certain aspects of the space policy as well as regarding the implementation procedures and concomitant budget allocations. The 2020 Plan in particular puts the spotlight on the following features:

- an output-driven space policy based on different user requirements (including security ones)
- a space policy providing investment predictability through long-term planning
- a space policy making efficient and effective use of various resources (including financial and human resources)
- a space policy oriented towards cooperation with allies and trustworthy nations

Lastly, the fourth part of the Basic Plan on Space Policy includes "Japan's concrete approach to space policy", which outlines specific programmatic measures Japan plans to employ to reach the objectives detailed in the policy.

*Table 1: Newly released Basic Plan 2020*

In addition to the Basic Space Law, the Basic Plan on Space Policy and the Implementation Plan, Japan has enacted a number of thematic policies and special laws, regulations and guidelines to deal with specialized issues pertaining to space – thus creating a comprehensive regulatory framework. The regulatory framework includes:

- the Act on Launching of Spacecraft, etc. and Control of Spacecraft (Act No. 76 of 2016)
- the Act on Ensuring Appropriate Handling of Satellite Remote Sensing Data (Act No. 77 of 2016)

As for the thematic policies, the most important include:

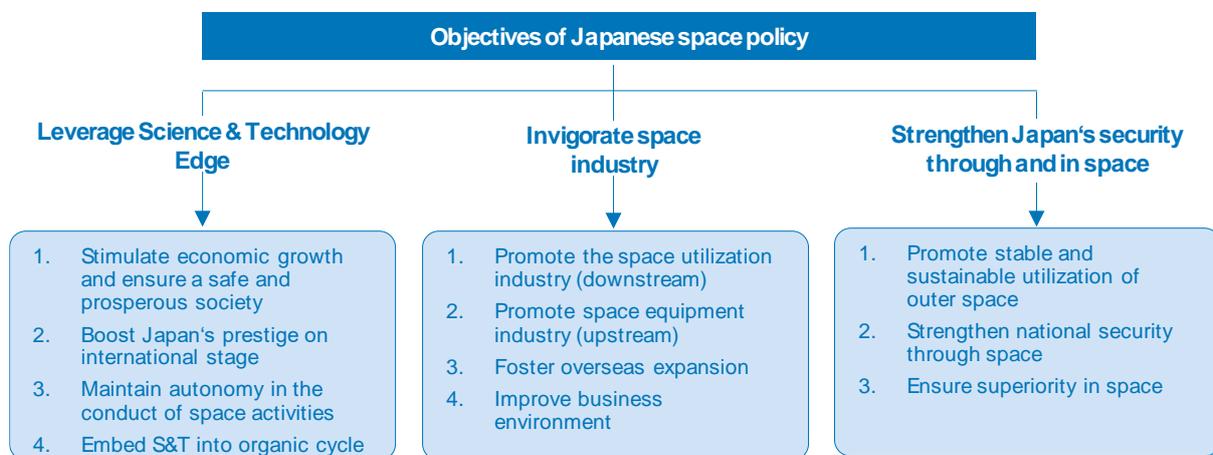
- *The Space Industry Vision 2030 of 2017,*
- *Strategy on Space Parts and Component Technical Development of 2018*
- *Vision for Enhanced Human Resource Bases in the Space Industry of 2018*
- *Japan National Defense Program Guidelines for FY 2019 and beyond.*

<sup>4</sup> Cabinet Office. (2020). 宇宙基本計画 (Basic Plan on Space Policy). Unofficial Translation by ESPI. Tokyo: CAO. Retrieved from: [https://www8.cao.go.jp/space/plan/kaitei\\_fy02/fy02.pdf](https://www8.cao.go.jp/space/plan/kaitei_fy02/fy02.pdf)

## JAPAN'S SPACE STRATEGY: DRIVERS, OBJECTIVES AND TOOLS

Despite some assessments that Japan's efforts have not been guided by "anything like a coherent national strategy"<sup>5</sup> for almost five decades, the passing of the Basic Space Law of 2008, the four subsequent Basic Plans on Space Policy (BSP) as well as the other sectorial policies with which the BSPs are interlinked make it evident that Japan has, in fact, matured a clear strategy for space. Not only: this strategy now proves to be also ambitious and multifaceted, if not full-spectrum.

Japan's space strategy has been changing and rapidly expanding over the past decade, with a major paradigm shift since the enactment of the Basic Space Law in 2008. Japan has shifted from an almost exclusively S&T centred space programme focused on achieving technical autonomy and driving the utilization of space for scientific purposes to a more holistic approach covering three major pillars, i.e. science & technology, the space industry and space security.



A set of objectives emerge for each pillar, which in their combined attainment should contribute to the **overarching goal of "securing Japan"** - a nod to Richard Samuels' assessment of the persistent and ubiquitous sense of vulnerability shaping Japanese strategic culture<sup>6</sup>. In Samuels' view, Japan decision-makers see a myriad of threats – coming from a rising China, the North Korean regime, its alliance with the United States (due to the possibility of entrapment and abandonment) as well as from Japan's own inability to maintain a competitive national economy and regional leadership.

An analogous line of reasoning can be also made for the space arena, an arena where Japan policy-makers have perceived the challenges of an inflexible marginalisation and loss of regional leadership, hollowing of their industrial, technological and economic edge, and even abysmal challenges to the national security and survival emanating from the changing regional and international environments. To comprehensively respond these threats, the past ten years have witnessed the crafting of a multi-pronged space strategy that – premised on the maxims of strength, autonomy and prestige – is aimed at using space to secure Japan from these persistent vulnerabilities.

The strategy for each pillar is driven by diverse endogenous and exogenous circumstances and reflect Japan's perceived challenges, thus addressing a variety of domains such as the social and economic dimensions, the military dimensions, as well as the political and prestige dimensions. To attain the objectives set out by the space policy, Japan has at its disposal a diverse set of "tools", which include programmatic tools, legal and regulatory mechanisms as well as cooperation and diplomacy.

<sup>5</sup> Pekkanen, S. M., & Kallender-Umezu, P. (2010). *In Defense of Japan*. Stanford, California: Stanford University Press. p. 11.

<sup>6</sup> Samuels, R. J. (2007). *Securing Japan: Tokyo's Grand Strategy And The Future of East Asia*. New York: Cornell University Press.

## Leverage the Science & Technology edge

Science & technology is one of three pillars of the Japanese space policy alongside national security and industrial vitalization. Japan's overall objectives for its current civil space policy are not only to maintain an edge in science & technology, but more properly to leverage this edge in order to serve the industry, national security and society at large. Four specific objectives come to the fore.

### Stimulate economic growth and ensure a safe and prosperous society

A core objective of Japan's civil space strategy is to **expand the integration of space in Japan's economy and society and make the best use of this infrastructure as a driving force for Japan's economic growth and societal well-being**. Particular emphasis is given to the efficient use of application satellites (PNT, EO, communication and broadcasting), in order to support the advent of the so-called **Society 5.0** – a society characterized by a high degree of convergence between cyberspace (virtual space) and physical space (real space) and where people, things, and systems are all connected. Space data is also considered to support the fourth industrial revolution in a wide range of fields and to contribute to the broader revitalization of the national economy by creating synergies with other revitalization measures.

A closely related objective is the **utilisation of space to resolve global challenges**. Japan sees a strong interlinkage between the affluence of its economy and society and its vulnerability to global challenges such as natural disasters and climate change, disruptions to the global trade or energy and resource shortages – and thus has a vested interest in resolving these challenges. In the BSP 2020, addressing these challenges is elevated to a key national interest.

### Strengthen Japan's international position through progress in frontier areas

Japan has accomplished significant achievements in frontier areas of space, being the fourth nation and the first Asian country to launch a satellite into space; and one of the first to launch a satellite to Moon and Mars. However, it is aware that other countries are not sitting idly. In this respect, the 2020 BSP highlights that "as more countries become more active in space and global competition in S&T intensifies, **Japan needs to undertake efforts to further strengthen its position as an advanced space nation**".

Fostering space science & technology thus enables Japan to stay abreast of the newest developments in S&T and keep pace with international ambitions towards more sophisticated and prestigious projects, in particular in the realms of human spaceflight and exploration. Japan perceives these domains to be a potential source of prestige and international recognition and thus plans on boosting Japan's international presence. By continuing to prioritize innovative R&D and projects in frontier areas, Japan aims to leverage S&T to **strengthen its position in the international space hierarchy** and more specifically serve as a leader in regional space activities.

### Ensure autonomy in the conduct of space activities

Ensuring autonomy in the conduct of space activities has always been important goal of the Japanese space policy. Autonomy has been seen as both an objective in itself and an enabler for the fulfilment of key other national interests, including national security, economic development and societal well-being. This objective continues to remain key for Japan.

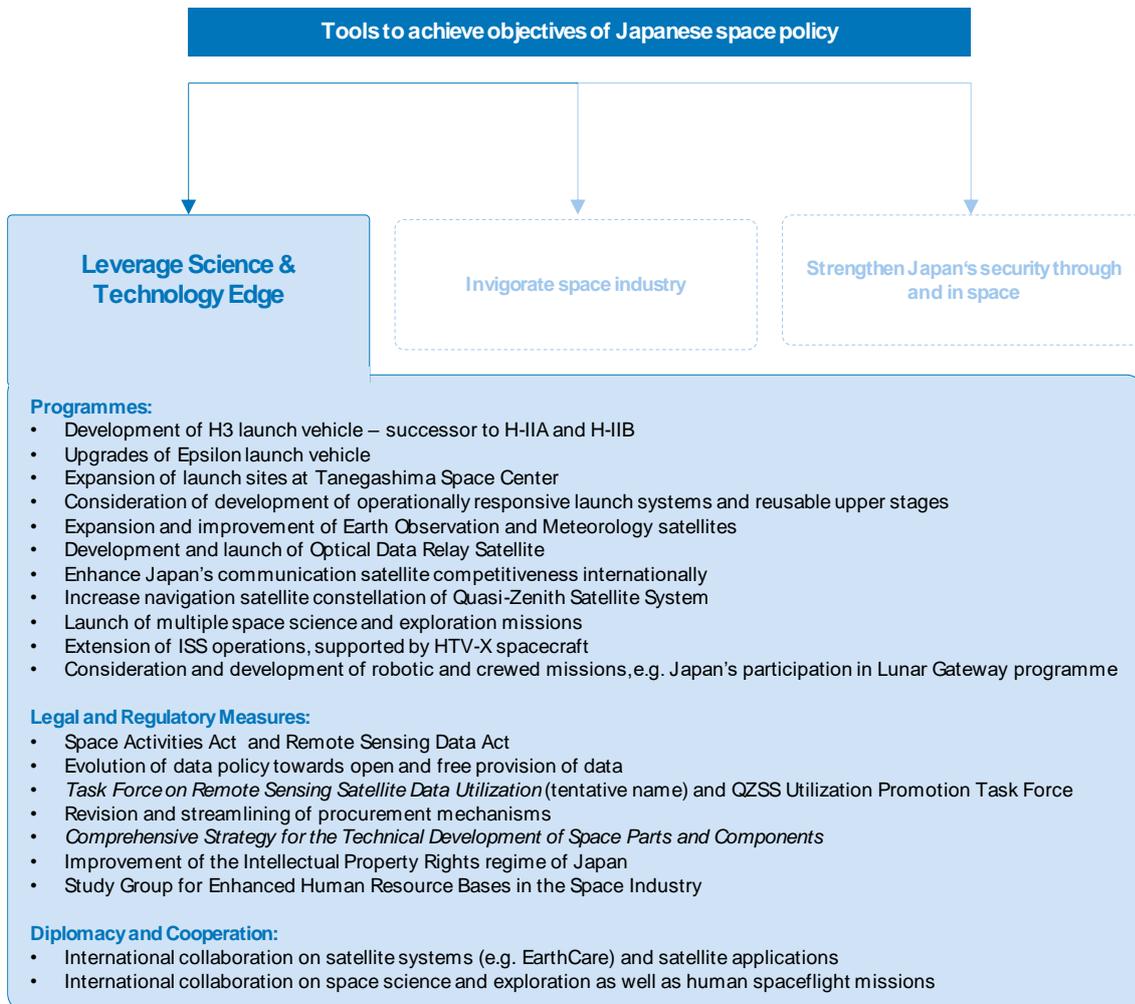
In this context, the 2020 BSP stresses that in order to contribute to various national interests, **Japan needs to "become an independent space power"**. At the same time, the 2020 BSP also recognises that Japan's industrial, scientific and technological base has begun to lag behind Europe and the United States in terms of technology development and response to the profound transformation of the space sector. The volume of institutional demand in Japan's space industry has also been insufficient to maintain an autonomous supply chain, especially for components.

In order to defy these challenges, the 2020 BSP highlights in particular the necessity to **create a new ecosystem for space activities where industry, academia, and government work together; expand domestic demand and capture foreign demand; promote R&D as well as demonstration of advanced technologies** (space optical communications, quantum cryptography, AI and simulation, small satellite constellations, etc.).

**Embed S&T into an organic cycle**

Japan perceives a lack of organic cycle between space science & technology, the space industry and national security, which has resulted in a weakened space industry and poses threats to national security and technical autonomy. Japan's objective is not to promote science & technology for science & technology's sake, but to **conduct research and development along the needs identified to serve the industry and national security objectives**. Japan will properly prioritize the "maintenance and reinforcement of value-producing science and technology infrastructure" by fostering R&D that provides benefits not only for short-term but also long-term goals through the collaboration between JAXA and the space industry.

To achieve all these objectives, Japan is deploying a variety of tools, as summarised in the chart below.



## Invigorate the space industry

Japan's strategy for the space industry is encapsulated in policy documents such as the 2008 Basic Space Law, the 2013 and 2015 Basic Space Plans, the Implementation Plans as well as the Space Industry Vision 2030. This latter document, in particular, summarises the Japanese government's strategy to expand the space market, improve competitiveness of the industry and stimulate the space economy. The declared target of Japan's space industry strategy is to **double the size of Japan's space economy, passing from ¥ 1,200 billion (about € 9 billion) today to ¥ 2,400 billion (about € 18 billion) by 2030**. To achieve this overarching purpose, the strategy rests on four main axes, namely:

### Promotion of the space utilisation industry (downstream)

The promotion the downstream space industry is the first axis and builds on the recognition that satellite data will be an indispensable part of the big data infrastructure, and hence a driving force of the Fourth Industrial Revolution, which will in turn contribute to strengthening the competitiveness of many industries. At the same time, there is a recognition that in Japan the continuity of satellite data is still lacking, that channels for acquisition are confusing and that there is a shortage of service providers for value-added business solutions. Therefore, the introduction of solutions that use satellite data is limited, concurrently limiting the growth on the demand side. Tackling stock of these issues, this axis of Japan's space strategy has a two-fold objective:

- on the one hand, to improve access to satellite data including sectors not directly related to space;
- on the other hand, to promote their use and application among all private actors.

### Promotion of the space equipment industry (upstream)

The second axis of Japan's industry vitalization strategy is the promotion of the upstream space sector. The target is to scale-up Japan's spacecraft industry to a total of ¥5 trillion in ten years. Reaching this target requires fulfilling two sub-objectives, namely:

- strengthening the international competitiveness of Japanese space industry by reducing costs for rockets and spacecraft manufacturing and by placing greater emphasis on the domestic development of cost-competitive key parts and components;
- Providing support for new entrants in the space market by adapting procurement rules, providing in-orbit demonstration opportunities and paying particular attention to the small launch sector.

### Overseas expansion

The third axis of Japan's industrial strategy focuses on ensuring access to the growing overseas markets. This objective builds on the recognition that while Japan's space market is stable, in order for Japan's space industry to expand in scale, it is essential to capture the growth of overseas markets which are mainly expanding in emerging countries. This axis is based on three main sub-objectives.

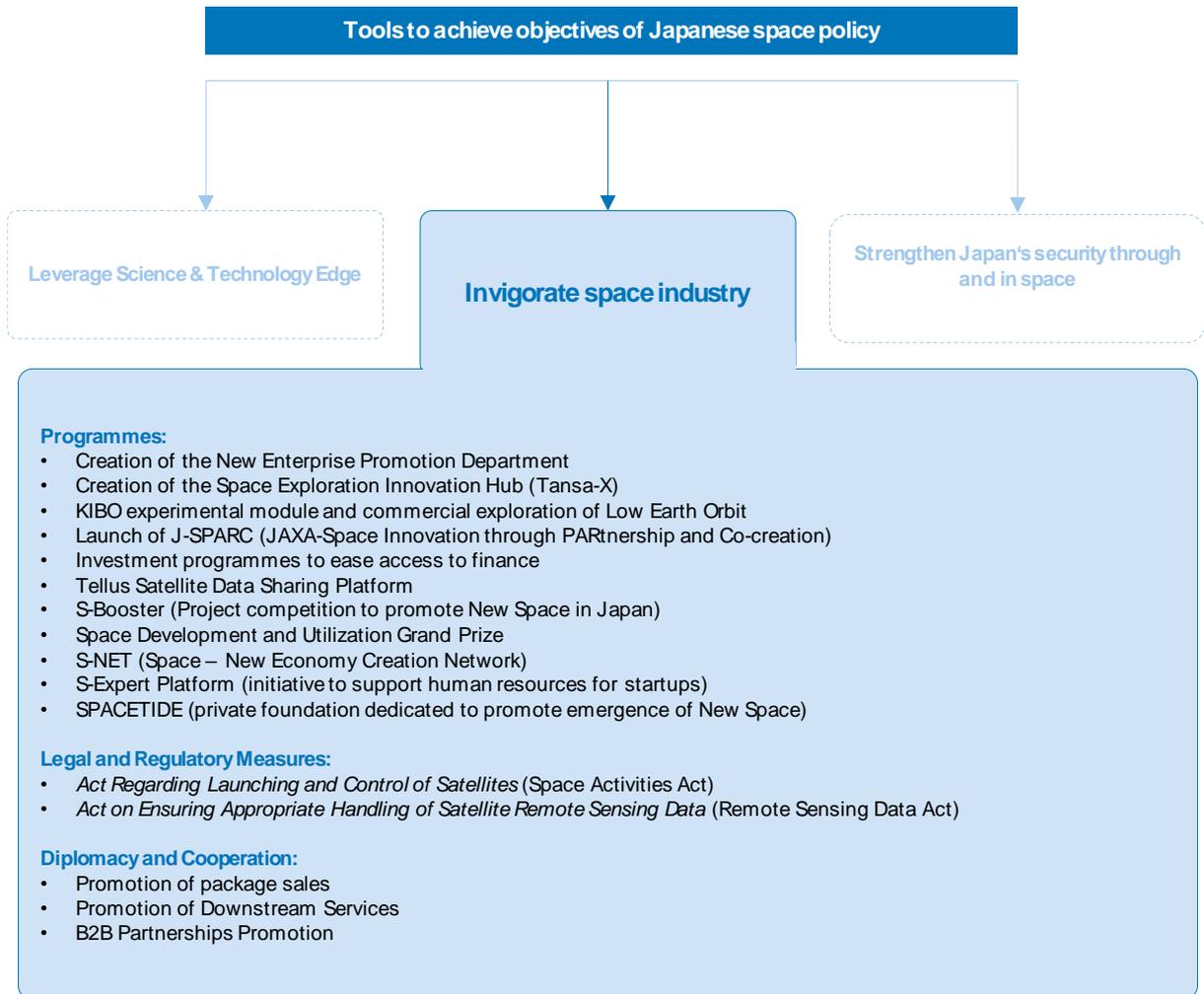
- The first one is to pay greater efforts towards identifying the potential needs of the partner countries in terms of equipment, services and human resources so as to propose appropriate solutions through the "Task Force on Space System Overseas Development".
- The second objective is to promote the use of Japanese remote sensing services and high-precision positioning services using QZSS in Asia and Oceania, while coordinating with the European Galileo system.
- The third objective is to reinforce international cooperation with the main national space agencies worldwide (in particular NASA, CNES and DLR) while promoting a stronger linkages and concrete space cooperation in the Asia-Pacific region through collaboration with APRSAF, the East Asia-ASEAN Economic Research Center (ERIA), and others and the Asia Development Bank (ADB).

### Improving the Business environment

The fourth axis of Japan's industrial strategy is the enhancement of the country's space business environment to facilitate new entrants in the market. The strategy envisages in this respect three sub-objectives.

- The first is to encourage the emergence of new activities and ideas by facilitating access to finance risk by venture companies and setting up competitions to support the commercialization of innovative projects.
- The second objective focuses on strengthening human resources, particularly in the field of information technology, to address the requirements of the Fourth Industrial Revolution.
- The third objective focuses on the creation of an institutional and legal framework favourable to the uptake of the New Space businesses. Two areas of activity are in particular targeted, namely the development of in-orbit services and activities related to the exploitation of space resources.

To reach the identified objectives, Japan employs an array of "tools", which encompass programmatic tools, legal and regulatory mechanisms as well as cooperation and diplomatic tools, as captured below.



## Enhance security *through* and *in* outer space:

Japan defines its broad security objective as setting out to “maintain Japan’s peace and security, to ensure its survival and to defend to the end Japanese nationals’ life, person and property of its nationals and territorial land, waters and airspace”.<sup>7</sup> With more specific regard to space, Japan defines three security-related objectives:

### Supporting security through outer space

Due to the perceived increase of national security threats within the changing security environment, and in light of the increasing importance that space assets have for security and defence purposes, Japan has since the enactment of the Basic Space Law in 2008 recognised the use of space “**to ensure international peace and security, and to increase the national security of Japan**” as a key objective of its national space programme. The National Security Strategy (NSS) and the successive BSPs (which are closely interlocked with NSS) outline the Japanese government’s aim to “reinforce its space-based systems for positioning, communications, data collection, etc., from the vantage point of utilizing space to strengthen Japan’s national security capabilities”<sup>8</sup>. Through a combined reading of these various policy documents, there appears to be three main target areas for advancing Japan’s space-related capabilities and promoting their utilisation in the security and defence field, namely:

- enhance Japanese military’s strategic support system, with a particular focus on supporting C4ISR functions of the Self Defense Forces (SDF), Ballistic Missile Defence (BMD), and Maritime Domain Awareness (MDA) within the **Free and Open Indo-Pacific Strategy**.
- promote disaster response and national resilience vis-à-vis major disasters such as earthquakes, tsunamis, volcanic eruptions, typhoons and torrential rains.
- contribute, in cooperation with the international community, to solving increasingly serious global issues such as energy, climate change, the environment, food, public health, and large-scale natural disasters, thereby supporting the achievement of the SDGs.

### Ensure a stable and sustainable utilisation of outer space

In light of the perceived vulnerabilities to Japanese space assets, the 2015 BSP clearly states that Japan’s objective is “**to address these risks effectively and ensure secure and stable utilization of outer space**”. Within the 2020 BSP, the objective gains even more prominence as compared to the other national interests. The document in particular outlines the country’s resolve “**to ensure a sustainable and stable utilization of space by improving the ability to characterize the space environment, strengthening functional assurance, and by playing an even greater role in establishing international rules**”. More specifically, Japan identifies a two-fold path:

- on the one hand, Japan aims to achieve these objectives through strengthening international cooperation as well as its partnership with the US.
- On the other hand, it aims to increase the resilience of its space infrastructure to debris, deliberate attacks, and space weather events by developing SSA and early warning systems and by fortifying the technological sophistication of hardware used in Japanese satellites.

By simultaneously working on these two aspects, Japan aims to prevent any abnormal change in outer space from adversely affecting Japan’s security and its use of space assets.

<sup>7</sup> Ministry of Defence (2018). *Defense of Japan 2018*. Tokyo: MOD.

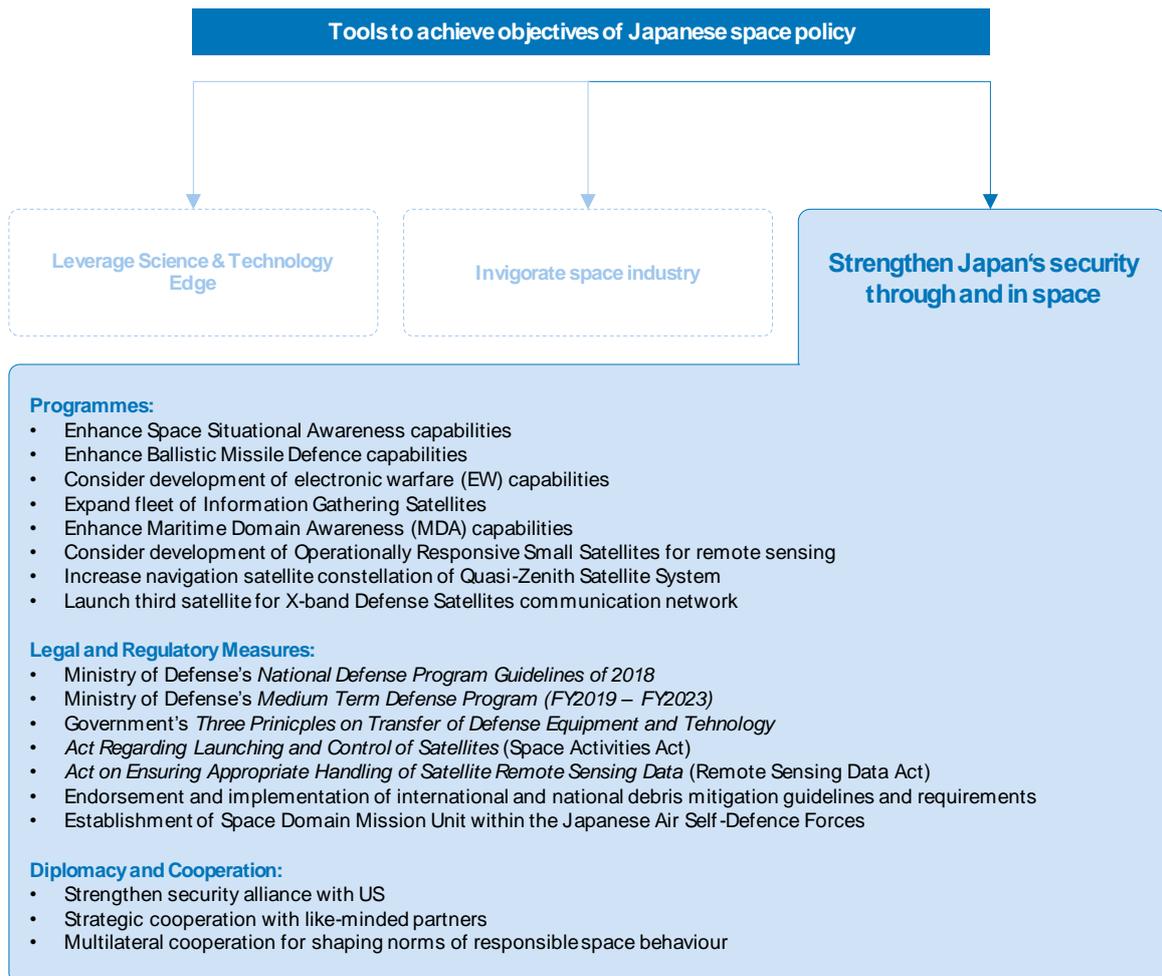
<sup>8</sup> Cabinet Office. (2020). 宇宙基本計画 (Basic Plan on Space Policy). Unofficial Translation by ESPI. Tokyo: CAO. Retrieved from: [https://www8.cao.go.jp/space/plan/kaitei\\_fy02/fy02.pdf](https://www8.cao.go.jp/space/plan/kaitei_fy02/fy02.pdf).

### Gain space superiority

Whereas Japan primarily aims to ensure space security through the promotion of norms of responsible behaviour, the recognition of their slow progression (particularly within the CD) and the deteriorating international circumstances have recently forced the country's officials to recognise the need to further its military deterrence and response capabilities by attaining space superiority.

The topic of space superiority as a military objective has been traditionally absent from Japan's policy debates, defence doctrines, and policy documents, which have firmly proposed a vision of space as a peaceful domain. However, the topic has gained prominence over the past few years, precipitated by the increasing weaponization tendencies brought about by the recent evolution in the posture and military doctrine of the major space powers. Consistent with this, the "National Defense Program Guidelines for [Fiscal Year] 2019 and beyond" stress that in strengthening its defense capability, **it has become essential for Japan to "achieve superiority in new domains, which are space, cyberspace and electromagnetic spectrum"**. With specific regard to the space domain, for MOD the objective is to "ensure superiority in use of space at all stages from peacetime to armed contingencies" and to "work to strengthen capabilities including mission assurance capability and capability to disrupt opponent's command, control, communications and information".

In order to maximize the use of space "to ensure international peace and security, and to increase the national security of Japan", Japan is deploying a variety of tools in particular to achieve this objective.



## FUTURE OUTLOOK

Japan's strategy in space shows an effort to strike a balance between different fields of action as well as a recognition that only with the concomitant implementation of different measures (programmatic, institutional and regulatory tools as well as diplomatic and cooperative efforts) can Japan create the necessary synergies to harness the potential of its programme and enhance its capability to exploit them to maximize the benefits for society and the nation as a whole.

Overall, the toolbox Japan has now at its disposal can help counteract potential bottlenecks for success such as the stagnating budget for space – the allocation of which on the surface does not reflect the ambition and prioritization of the programme itself. Japan shows through initiatives such as promoting the creation of an organic cycle and new synergies among the various stakeholders, that it can make use of resources smarter and ensure outstanding results even with a plateauing budget.

At the same time, it is undeniable that the relative size of Japan's space programme will increasingly matter, especially when comparing Japan's space efforts to the ones led by continental-size actors such as US, China, and even Europe. Indeed, notwithstanding the certainly remarkable synergies the country is creating among the various facets of its programme, as long as the resources dedicated remains within the same order of magnitude, it will be hard for Japan to effectively fulfil all the objectives set forth in its space strategy. This implies that the country will inevitably be confronted with both the need to prioritise specific activities/objectives over others and strike a proper balance between multiplying the benefits of enhanced cooperation and the level of independence/autonomy it wants or can achieve.

Looking at the future, it can therefore be expected that Japan's international space cooperation will increase, particularly with the U.S. ally, but also with other like-minded partners. In fact, although Japan will certainly continue to reinforce space cooperation with the United States for security reasons, it is also likely that it will consciously seek a diversification of its partnership portfolio away from Washington, to not be too reliant on the capabilities of one single partner and also to address the perennial concerns over both entrapment and abandonment. Arguably, one such diversification will be constructed on programmatic bases, for instance, by privileging cooperation with Europe in the field of space science where European and Japanese priorities are converging, or by focusing on the Asia-Pacific region with regard to the creation of business partnerships and commercial service provision where links are already strong thanks to APRSAF and other bilateral cooperation.

Whereas cooperation will continue to play an important role in Japan's toolbox, Japan's end-to-end capabilities and its development of complex program initiatives to further its goals it should not be overlooked. The increased emphasis put on industry vitalisation has not only yielded a vibrant New Space sector, it will also stimulate competition in the provision of space-related services, which can also be expected in the coming years. The specific measures that Japan has put in place to stimulate the growth of its commercial industry are indeed wide-ranging and – together with its increasingly active economic space diplomacy – they will likely make of Japan a fierce competitor for European and American primes and SMEs. Its legacy in space science and technology and related initiatives to boost R&D have allowed amongst others, the ambitious pursuit of exploration missions, e.g. its future participation to the Moon exploration scheme envisaged by the U.S. Its increased funding for the development and procurement of its space security infrastructure will enable Japan to meet its space security needs. All of the initiatives related to the three pillars detailed in the report show Japan's relentless ambition in its space pursuit.

It is this report's assessment, that all these considerations make Japan well suited to face the challenges that lie ahead. Due to its legacy in space, sustained efforts and ambitious policies and programmes, Japan is bound to remain among the most prominent actors in space for decades to come.

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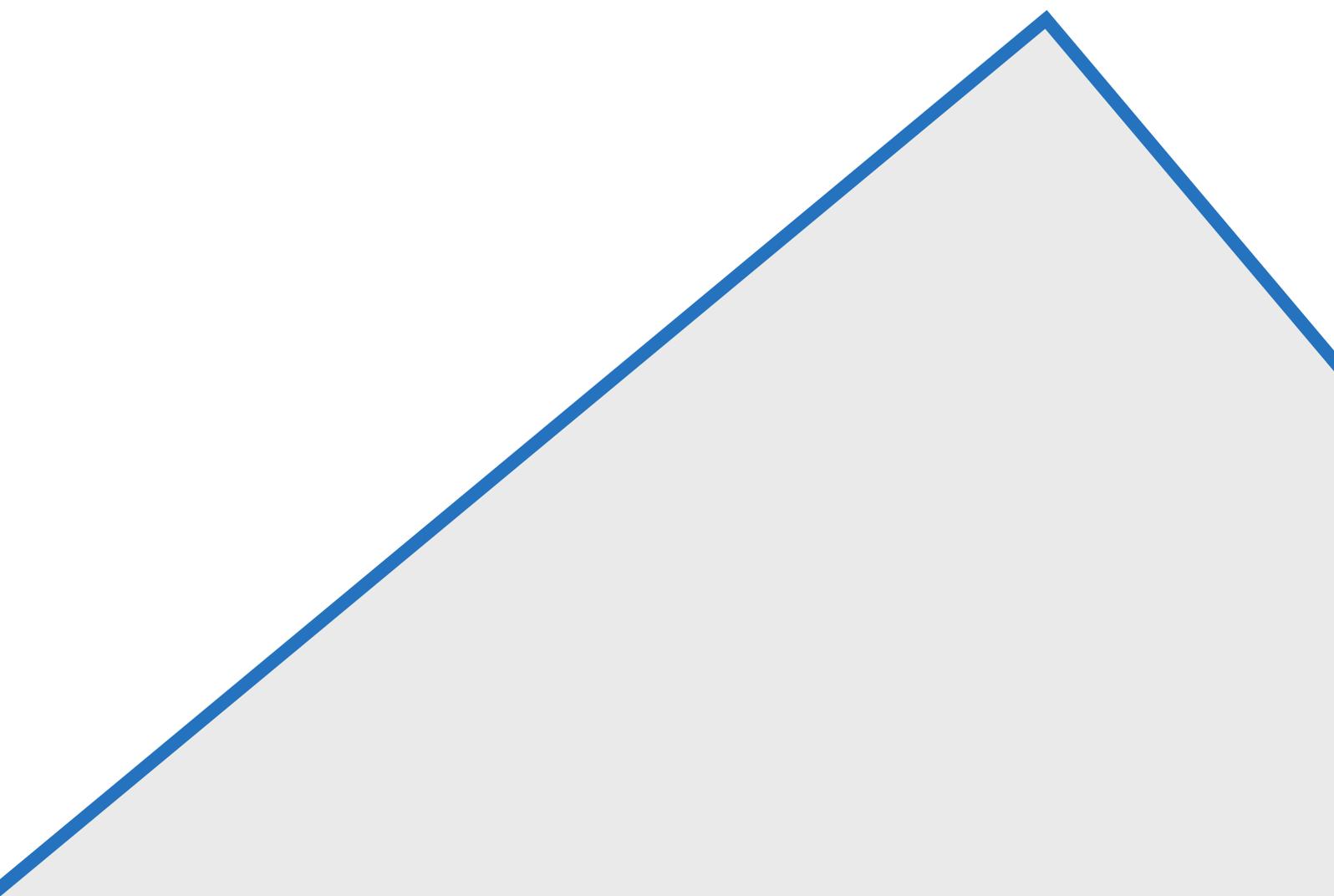
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